Safford Regional Airport Master Plan Update 2000

Safford, Arizona

Land Use Analysis

Chapter 7 Land Use Analysis

7.1 INTRODUCTION

The purpose of this land use analysis is to document the anticipated impacts of airport improvements on the land within the airport boundary, on adjacent properties, and on the community as a whole.

7.2 ON-AIRPORT LAND USE

The on-airport Land Use Plan for Safford Regional Airport adopts general FAA criteria for the use of airport property (FAA Advisory Circular 150/5070-6A, Airport Master Plans):

- Adherence to standards in support of safe aircraft operations.
- Non-interference with line of sight or other restrictions for navigation aids and weather equipment.
- Use of existing facilities, to the extent possible, depending on their location, condition, and obligations with respect to their use.
- Consideration of topography and available infrastructure that might affect development costs.
- Flexibility in accommodating changes in demand and expansion.
- Effective and safe ground circulation for aircraft and vehicles.

Exhibit 7-1 illustrates the Land Use Plan for Safford Regional Airport. The plan depicts both existing and future land uses. The categories of on-airport land use include:

- Airfield Operations Area
- Helicopter Operations Area
- Terminal Area, FBO, and Support Facilities
- Corporate and Private General Aviation (GA)
- Bureau of Land Management (BLM)
- Military
- Aviation Reserve

- Aviation or Non-Aviation* Related Development
- Commercial/Industrial Development**
- Open

* Non-aviation development proposed is subject to future FAA review and approval
** Pending FAA review and approval – currently in progress

7.2.1 Airfield Operations Area

The highest priority use for airport land is present and future air operations. This category includes runways, taxiways, aprons, navigation aids, and their associated clearances. The boundary of the air operations land use is generally equivalent to the Building Restriction Line (BRL) which includes approximately 300 acres of existing airport property and existing aviation easements as well as proposed acquisitions (10 acres). The BRL is defined by:

- 780-foot wide area centered on Runway 12-30, protecting a 500 foot-wide primary surface and the 7:1 slope transitional surface to a height of 20 feet.
- 1300-foot wide area across Runway 8-26, protecting an existing 250 foot-wide primary surface, the 7:1 slope transitional surface to a height of 20 feet, and additional area to the north in support of the City's Beyond 2020 development plans (see Chapter 5, Section 5.4 and Exhibit 5-4).
- Taxiway and taxilane object free areas
- Aircraft apron areas
- Line-of-sight critical area (also referred to as the Runway Visibility Zone)

The trapezoidal runway protection zones (RPZs) at the end of each runway are also a part of the airfield operations area. These RPZs should not contain buildings. However, some ancillary land uses other than air operations are permitted within the RPZ, provided they do not attract wildlife, are outside the runway object free area, and do not interfere with navigational aids. Automobile parking is discouraged, but permitted. Fuel storage, residences, and places of public assembly should not be located in the RPZ. The RPZs at Safford Regional Airport are clear with the exception of a roadway that traverses both Runway 12 end and Runway 8 end RPZs.

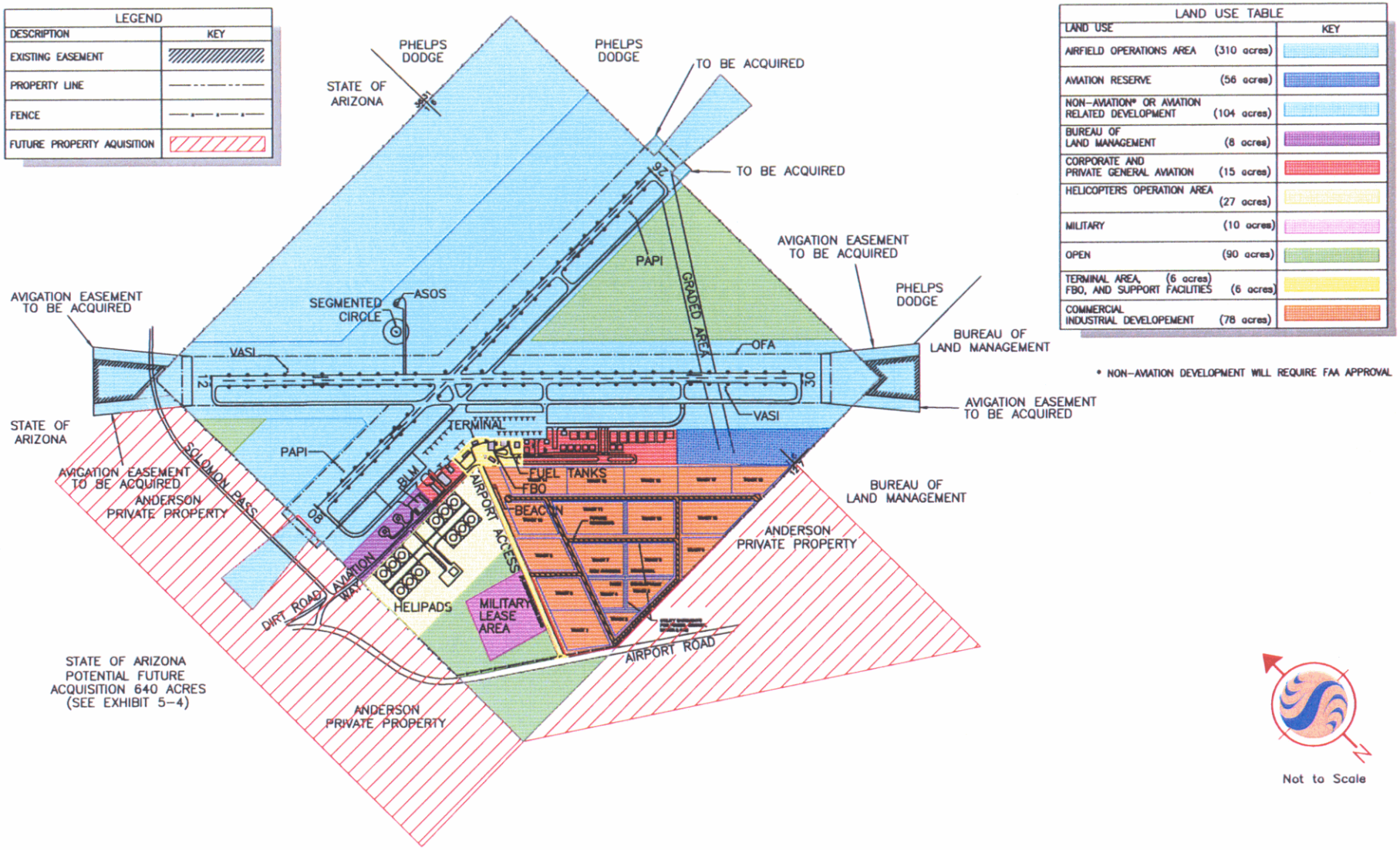

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EXHIBIT 7-1
On-Airport Land Use Plan

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7.2.2 Helicopter Operations Area

The helicopter operations area boundary is generally defined by the existing public use helipad, adjacent future helicopter parking spaces, and protected helicopter approach airspace. This land use is identified separately from the airfield operations since the parcel is not contiguous to the airfield and to distinguish between the rotorcraft and fixed wing future development needs. The helicopter operations area land use totals approximately 27 acres.

7.2.3 Terminal Area, FBO, and Support Facilities

The terminal, FBO, and support facilities land use area is centrally located on the south side of the airport. This land use consists of approximately six (6) acres and includes the existing terminal building, location of future terminal building, terminal area parking, future airport access, fuel storage, and the FBO's two hangars, service building, and residence. While the FBO will generally remain in the same leased area, there are current plans to rebuild and expand the FBO facilities within this designated land use area.

7.2.4 Corporate and Private General Aviation (GA)

For the purpose of the land use analysis, corporate and private GA includes all of the existing and proposed hangar development which does not belong to the FBO or BLM, such as based aircraft hangars or future corporate hangars. Existing private GA hangars are located on the south side of the airport to the east and west of the terminal area. Future private GA hangar development is planned to the east of the existing terminal area where contiguous land is available for expansion. Locating this development in a contiguous area simplifies future taxilane development, utility expansion, and overall management of facilities by separating various airport activities. Airport property identified for corporate and private GA land use total approximately 15 acres.

7.2.5 BLM

BLM facilities are located in the southwest part of the airport just west of a row of private GA T-hangars and north of the helicopter operations area. This land use designation is dedicated for firefighting facilities under a lease between the City of Safford and BLM.

This BLM land use designation extends to the western boundary of the airport for a total of approximately eight (8) acres.

7.2.6 Military

A military lease totaling approximately ten (10) acres controls a portion of the south side of the airport between the helicopter operations area and the southwest boundary of the airport. While this area is not needed for airport development in the twenty-year planning period, consideration of airport needs beyond the planning period should be addressed in conjunction with any future lease negotiations. As previously shown in Chapter 5, Exhibit 5-4, 50-year Outlook, the military lease currently contained in this area is proposed for relocation to the northeast part of the airport.

7.2.7 Aviation Reserve

Undeveloped land provides an airport with flexibility to meet unforeseen needs and with expansion capability beyond the 20-year planning period. Although the primary master planning drawings have identified a small 14-acre parcel southeast of the proposed hangar development area as aviation reserve, the City's ultimate development plans beyond 2020 (see Chapter 5, Section 5.4) designate two more large parcels for aviation reserve totaling approximately 400 acres. It is anticipated that these aviation reserve areas will be consumed for development beyond 2020 as terminal area, FBO, GA, and support facility needs grow.

7.2.8 Aviation or Non-aviation Related Development

Undeveloped land on the north side of the airport beyond the airfield operations area is designated as aviation or non-aviation related development and totals approximately 104 acres. The City is interested in pursuing non-aviation industrial development on this parcel in the future. In the past, Section 16 requirements prohibited the use of Safford Regional Airport's property for any non-aviation purpose. However, recent Federal legislation revised some of the Section 16 requirements for the Airport. The legislation allows, with FAA approval, non-aviation development for those portions of the airport not necessary for aviation needs. The City of Safford and the Airport Authority must submit and obtain FAA review/approval on an application to release subject property for non-

aviation use and development. This area can serve economic development efforts and potentially improve the airport's future financial position. If the area remains designated as aviation use, potential development could include aircraft part manufacturers or air/ground cargo staging areas.

7.2.9 Commercial/Industrial Development

Additional undeveloped property south of the terminal area and east of the future airport access road is designated as commercial/industrial development since this area is in close proximity to the main road and adequately separated from the aviation development requiring runway access. However, as noted in Section 7.2.8, this proposed non-aviation development must be reviewed and approved by the FAA. The City is preparing an application to the FAA to "release" this property (totaling 78 acres) from its current "aviation use only" restriction.

7.2.10 Open

The "Open" land use represents remaining parcels of property not designated for other uses. There are three parcels with this designation, two of which are located in areas without existing or planned auto access. The third parcel is in the southwest section of the airport around the existing military lease area. The "Open" land use areas total approximately 90 acres.

7.3 LAND ACQUISITION AND CONTROL

Based on the aviation demand forecasts, Safford Regional Airport has sufficient land for proposed airport development during the planning period. However, the airport has insufficient control of the RPZs off both Runway 12 and 30 ends and the object free area (OFA) off both Runway 8 and 26 ends. Currently, the inner portion of the Runway 12-30 RPZ is controlled with an easement at each end. The easements are the size of the former RPZs for Runway 12-30 which were defined for small aircraft exclusively. These easements should be expanded to the boundary of the existing RPZs (for larger aircraft). Although Runway 8 and 26 end RPZs are owned in fee simple, four small segments (two on each end) of the runway's OFA are outside airport property. Per FAA guidelines, these areas should also be controlled in fee simple. As previously discussed in Chapter 5,

Section 5.4, additional land acquisition is necessary to protect for the City's ultimate (beyond 2020) airport development plans and to prevent incompatible development around the airport.

7.4 OFF-AIRPORT LAND USE

The major concerns for land use compatibility with airports are noise and airspace. In addition, activities near the airport should not emit smoke, produce glare, produce electromagnetic interference that could affect radio navigation and approach aids, nor attract wildlife, so that they do not interfere with aviation activity.

Off-airport land use planning seeks to maximize compatibility between airport activities and other land uses in the vicinity of the airport and minimize the impacts of aircraft activity on the surrounding community.

According to FAA Order 7400.2C, "When airport design standards are combined with appropriate state and local zoning ordinances, the resultant effect will: assure the lowest possible operational altitudes for aircraft; protect the economic investment in the airport; and promote safety in the areas affected by the airport by assuring, through proper development, land use most beneficial to the community."

Currently, Safford Regional Airport is surrounded by undeveloped land. This land, under the jurisdiction of Graham County, is held by four separate property owners to include Phelps Dodge, Bureau of Land Management (BLM), State of Arizona, and private property owners (the Anderson's).

Graham County has a planning and zoning commission. Although the County's current land use plan does not depict future residential development adjacent to the airport, the Anderson property owners previously submitted a rezoning request in order to develop their property along the southeast end of the airport with residences including mobile homes and high density residential development. To date, the Graham County Board of Supervisors has denied such rezoning.

It is the position of the City of Safford that it is essential to develop the area around the airport in a manner that will ensure compatible land use in consideration of the long-term viability of the airport and to minimize future aircraft noise impacts to the

community as the airport grows. To that end, Safford will continue to discuss this land use with adjacent property owners and Graham County in a continuing effort to maintain compatible land use. Based on recent discussions, the City of Safford is considering the possible purchase of certain parcels and reserving them for long-term aviation and commercial/industrial development. The primary objective is to protect the airport from residential encroachment – a significant and ongoing problem for existing airports across the country. Residential encroachment results in noise complaints against the airport which conflicts with the FAA's mission to develop and maintain a safe, efficient, and environmentally compatible air transportation system. Further, residential encroachment places the most pressure on an airport over time to "close" or relocate. Therefore, land acquisition around an airport may be the best alternative to ensure compatible land use development when other measures are unsuccessful or more costly.

It is the intent of the City to pursue funding from Arizona Department of Transportation (ADOT), Aeronautics Division, for the purchase of property adjacent to the airport to assure compatible land use development.

Additional discussion of off-airport land use is presented in this section to specifically address the following topics:

- Airspace
- Airport Influence Area
- Noise

7.4.1 Airspace

The airspace drawing in the Aireport Layout Plan drawing set (see Chapter 8) indicates the sloped imaginary approach, departure, and transitional surfaces that define the airspace that should remain unobstructed by structures, vegetation, or terrain. Further, consideration of any future development plans adjacent to the airport should include the submittal of an FAA Form 7460-1, Notice of Proposed Construction, to allow the FAA the opportunity to review its potential adverse impact on the airspace surrounding the airport. A copy of FAA Form 7460-1 is included in Appendix G.

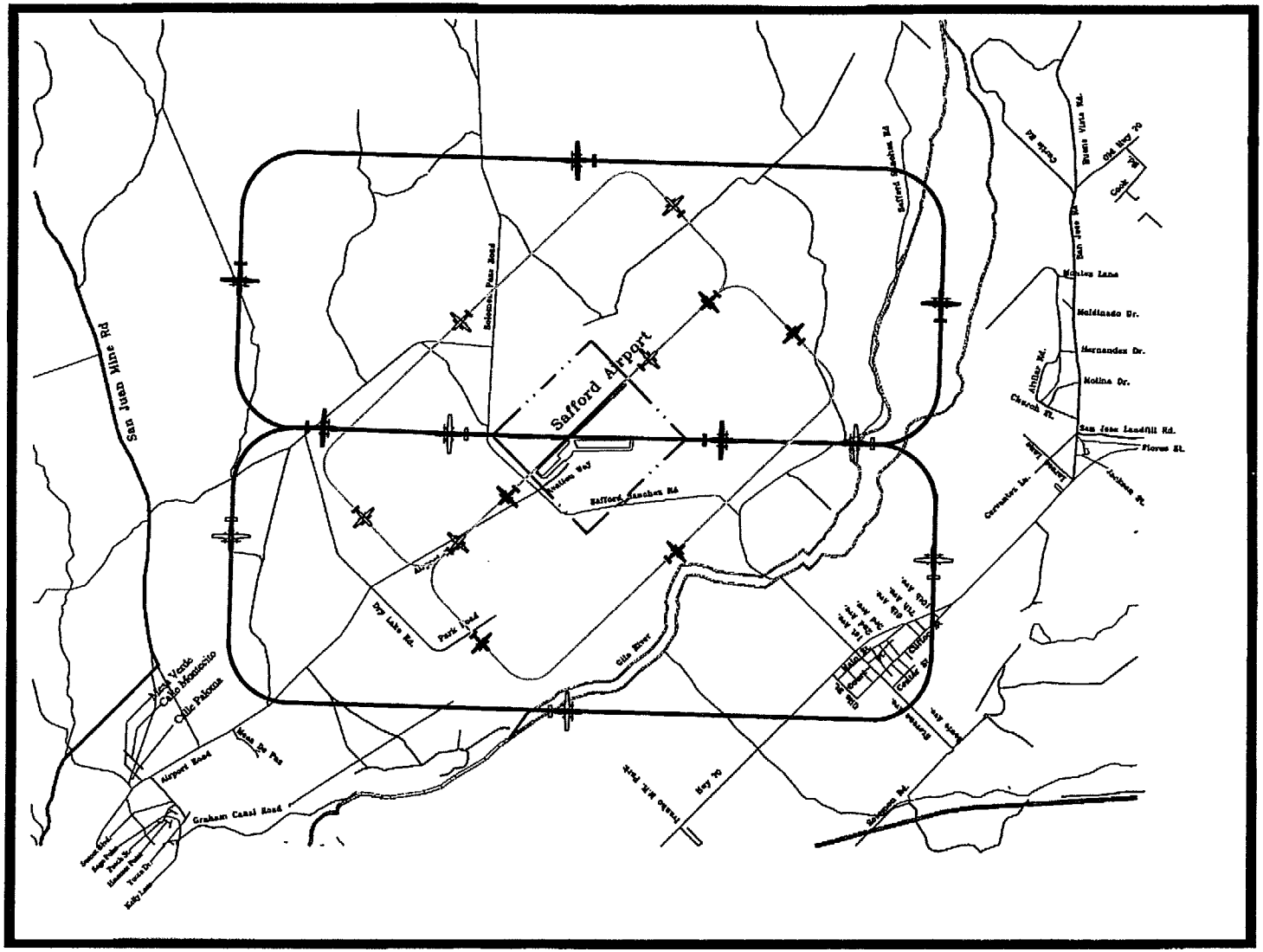
7.4.2 Airport Influence Area

The City of Safford has continued to grow since the last airport master plan. Fortunately, the Safford Regional Airport is located four miles northeast of the City so residential encroachment adjacent to the airport has not occurred. In order to provide continued protection of the airport's viability, the City of Safford developed and adopted an Airport Influence Area (AIA) under House Bill 2491 (see Appendix H), effective October 1, 1997, regarding the same. The legislation gave airport owners the ability to designate an area around the airport which is exposed to noise and overflights as determined by the airport owner or operator. Arizona Department of Transportation, Aeronautics Division, recommended that this area be based on the airport traffic patterns as defined in FAA guidance. Thus, the City of Safford adopted an AIA which takes into account both existing and ultimate aircraft operations at the airport. This AIA is shown in **Exhibit 7-2**. Solid lines represent the primary influence area boundary; dashed lines represent the secondary (buffer) area boundary. As shown, primary Runway 12-30's Influence Area is larger than crosswind Runway 8-26's Influence Area, but small corner parts of Runway 8-26's Influence Area do extend beyond Runway 12-30's Influence Area. While the AIA does not extend over the core of the City of Safford, it does extend over the community of Solomon.

The AIA was developed and adopted in the early stages of the master planning process before the aviation demand forecasts were prepared to identify the future aircraft fleet mix and operations. However, the previous master plan as well as a preliminary assessment of aviation demand guided the AIA process. This effort resulted in the establishment of a set of guidelines and assumptions under which the City could define and adopt an AIA. As the master plan progressed, these guidelines and assumptions, listed below, were validated.

7.4.3 Noise

As described earlier, the primary cause of incompatibility between an airport and the surrounding community is aircraft noise. Noise-sensitive development often surrounds an airport before the problem is recognized. Noise is a major source of environmental pollution and represents a threat to the serenity and quality of life for those individuals exposed to it.



Note:

Traffic pattern based on future aircraft activity identified in Airport Master Plan, 2000.

Source:

Street map provided by Graham County.

Scale: 1"=6,000'

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Exhibit 7-2
Airport Influence Area

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The degree of which people will suffer from the nuisance of aircraft noise varies depending on their activities at any given time. While people are less disturbed by noise when they are driving, working, or shopping, they are more disturbed when they are at home. Many residents living near airports already complain that aircraft noise is disturbing regardless of whether their home is inside what is considered an incompatible "noise contour" around an airport. While FAA has published noise compatibility guidelines, they explicitly state that determination of noise compatibility and regulation of land use are purely local responsibilities. There are variations in human tolerance to aircraft noise. For example, it may be tolerated more by people living in a noisier urban environment than by people living in rural communities.

Methodology

To define the effect of aircraft-generated noise on a community, an effective and appropriate measure of cumulative noise exposure is needed. The Federal Aviation Administration Integrated Noise Model (INM 5.1) was used to measure noise in this study. The Integrated Noise Model, over a 24-hour period, accounts for separate aircraft flying along flight tracks identified as straight-line or curved segments. These flight tracks are coupled with other data relating to noise, slant range, and engine thrust for each distinct aircraft type in the fleet mix to provide a cumulative measure of daily noise, with a penalty for nighttime aircraft activity (Day-Night Sound Level [DNL] metric). This methodology is consistent with existing measurement technologies. This methodology has been adopted by the FAA in response to the requirements of the Airport Safety and Noise Abatement Act of 1979 for a standardized noise system and is also recognized by the Environmental Protection Agency (EPA), and the Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure.

Noise is expressed as the Day-Night Average Sound Level, or DNL (formerly referred to as Ldn). DNL is the national standard accepted by the FAA for describing cumulative noise exposure and identifying noise/land use compatibility issues. DNL is the average noise level in decibels (dB) over a full 24-hour period with a 10-decibel (dB) penalty applied to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL contours do not represent actual noise conditions present on any specific day or absolute boundaries of acceptability in personal response to noise.

Application of the DNL measurement methodology produces a series of noise level contour lines (DNL contours) which depict noise levels. These are superimposed on a map of the airport and its environs. Contour lines are a summation of all the noise produced by aircraft operations for a year. The DNL levels for Safford Regional Airport use forecast information pertaining to daily aircraft operations, and actual runway utilization, flight track utilization, and aircraft flight track profiles.

DNL mapping is primarily a planning tool. Noise exposure contours should be viewed as a means for comparing average noise impacts, not precisely defining them relative to a specific location at a specific time.

Integrated Noise Model (INM 5.1) Input Data

Noise modeling for the Safford Regional Airport used the following type of information as input.

- Existing (1997) and forecast operations (through 2020)
- Runway utilization by departure-arrival track usage
- Day/night operations split
- Touch-n-go (T&G) operations
- Flight tracks for arrivals, departures, and T&G's
- Airport Elevation
- Mean Maximum Temperature

Please see Appendix I for details of the airport noise input.

Since Safford does not have an air traffic control tower, some operational information used for the INM Model had to be estimated. Estimates were prepared using input from FAA records and the FBO (on-site airport management).

Noise Modeling Output

For the purpose of this study, a set of four noise contours were modeled to include the 55, 60, 65, and 75 DNL. These contours were modeled for the base year (1997) and the end of the planning period (2020). The Off-Airport Land Use/Noise Maps, **Exhibits 7-3**

and 7-4, illustrate the 1997 and 2020 noise contours, respectively. The existing off-airport land use served as the base sheet for the contours to provide a better gauge of the potential noise impacts. As shown, both the 75 and 65 DNL contours are contained on airport property with the exception of the west end of the airport near the helicopter operations area. The 60 and 55 DNL contours extend well outside the airport boundary for both the existing and 2020 conditions.

While FAA guidance states that all land uses are compatible with levels below 65 DNL, it is important to reiterate that this does not imply that the population beyond the 65 DNL contour will not experience noise. In fact, there are many airports receiving significant noise complaints and airport opposition from a population well outside the 65 DNL. Further, many of the residents located adjacent to these airports were not complaining until airport activity grew – typically synonymous with community growth. Thus, those land uses that are the most sensitive to noise should be carefully sited with long-term growth in mind. Such noise-sensitive land uses include residential areas, schools, hospitals, churches, and auditoriums. The firefighting operations based out of the Safford Regional Airport, while not regular throughout the year, can impose significant noise exposure well outside the airport boundary and for a number of days until a fire is controlled or extinguished.

7.5 RECOMMENDATIONS

Safford Regional Airport is in a fortunate and rare position -- the airport's surrounding environs are currently compatible with the airport's existing and forecast activity. However, maintaining this compatibility requires continued efforts. As previously stated, the City of Safford's position is to protect the airport environs and ensure all development adjacent to the airport is compatible with airport operations. This Plan recommends that the City and County coordinate all future land use planning efforts with respect to the airport and its environs. This effort will serve to maintain the integrity of the airport, protect the large investment in the airport, and minimize the growing community's exposure to noise from the airport. Further, this Plan recommends that Graham County recognize and take into consideration the City-adopted AIA in future planning efforts.

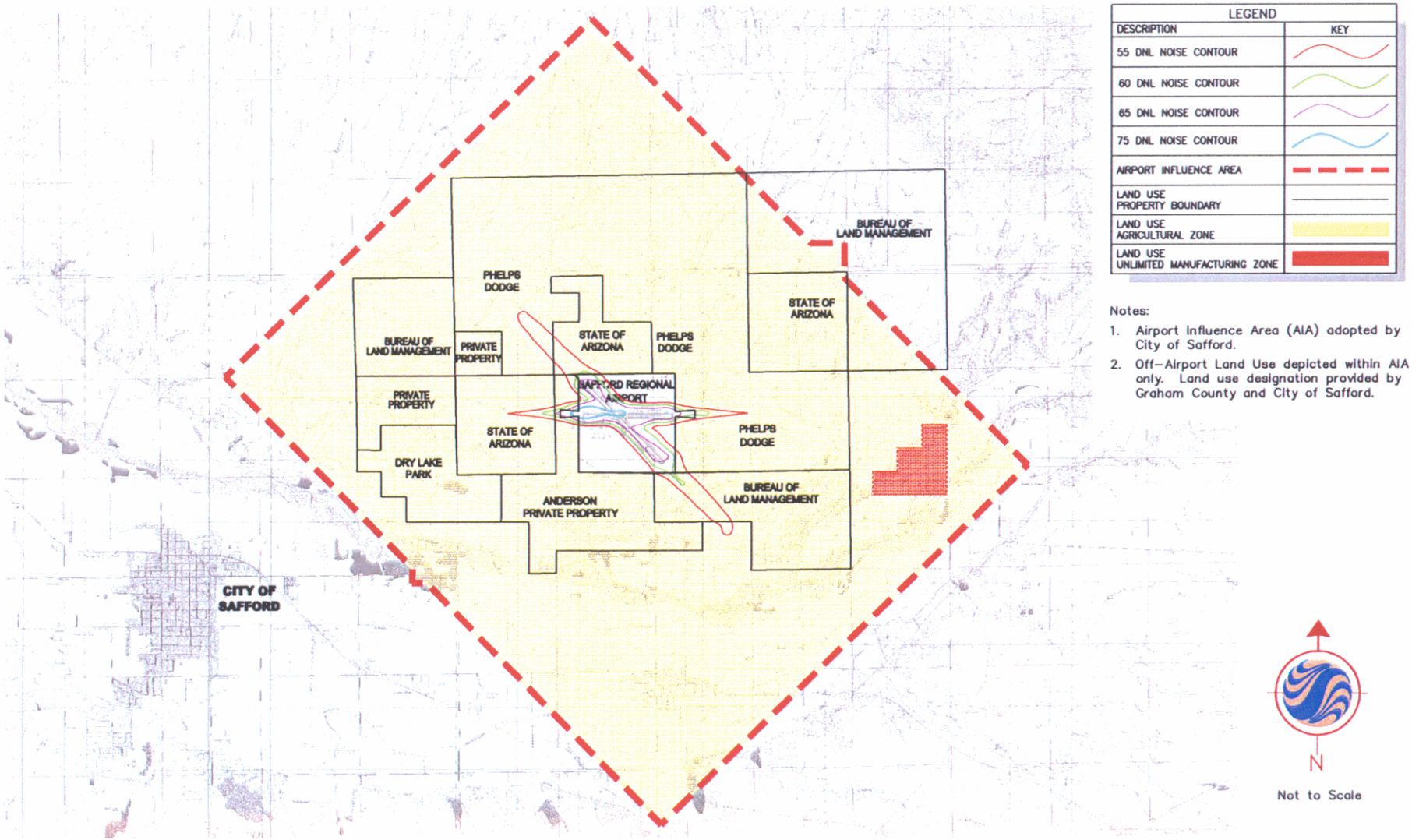

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EXHIBIT 7-3
Off-Airport Land Use/1997 Noise Map/AIA

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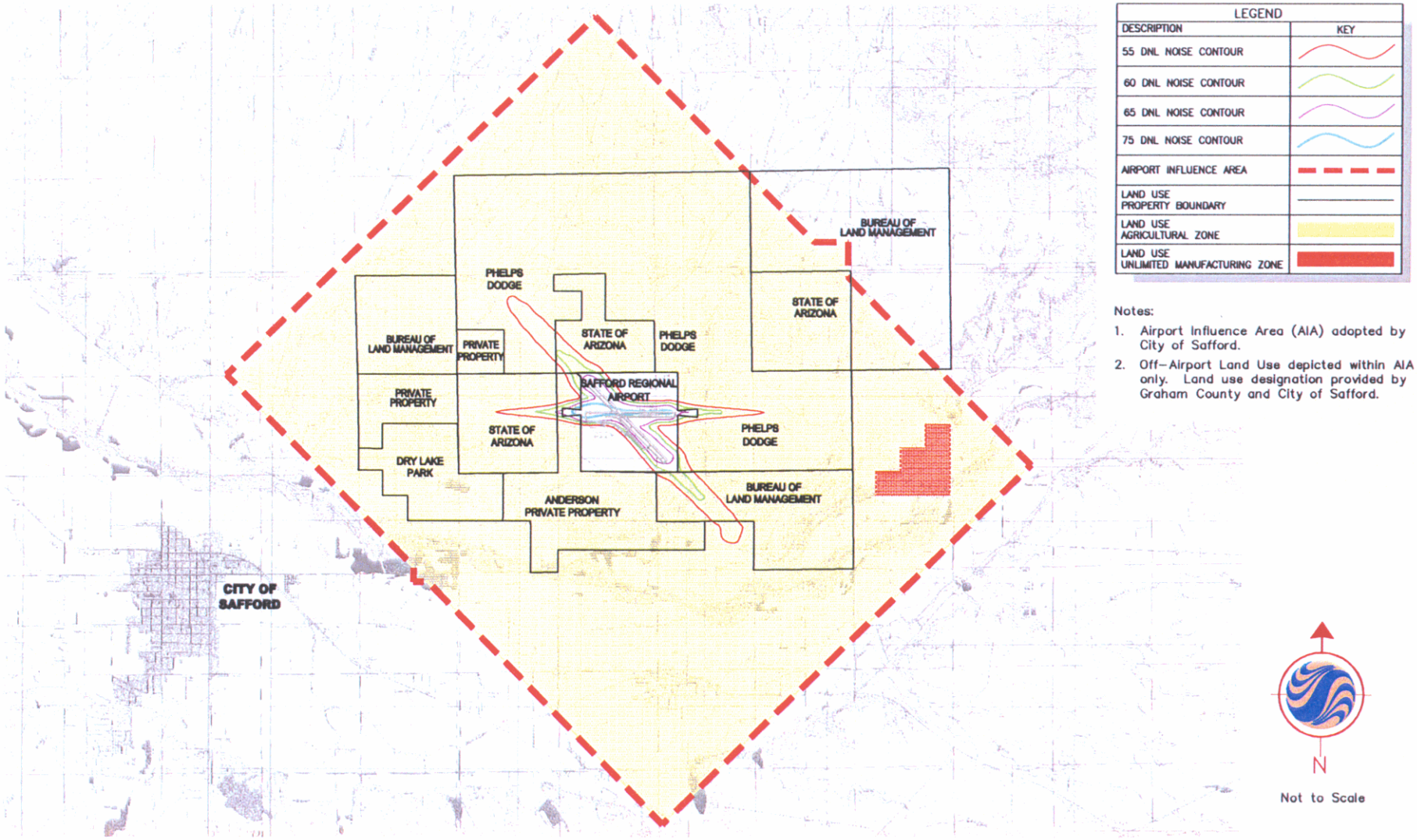

LEGEND	
DESCRIPTION	KEY
55 DNL NOISE CONTOUR	
60 DNL NOISE CONTOUR	
65 DNL NOISE CONTOUR	
75 DNL NOISE CONTOUR	
AIRPORT INFLUENCE AREA	
LAND USE PROPERTY BOUNDARY	
LAND USE AGRICULTURAL ZONE	
LAND USE UNLIMITED MANUFACTURING ZONE	

Notes:

1. Airport Influence Area (AIA) adopted by City of Safford.
2. Off-Airport Land Use depicted within AIA only. Land use designation provided by Graham County and City of Safford.

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Not to Scale

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EXHIBIT 7-4
Off-Airport Land Use/2020 Noise Map/AIA

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